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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARTIN M. BARRERA and ALEX E. SPENCER

Appeal 2010-000725
Application 09/675,860
Technology Center 3700

Before STEVEN D.A. McCARTHY, MICHAEL C. ASTORINO, and
ANNETTE R. REIMERS, *Administrative Patent Judges*.

REIMERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE¹

Martin M. Barrera and Alex E. Spencer (Appellants) appeal under 35 U.S.C. § 134 from the Examiner's decision to reject (1) claim 31 under 35 U.S.C. § 112, second paragraph, as indefinite; and (2) claims 1-5, 7-10, 12-17, 19-21 and 26-31 under 35 U.S.C. § 103(a) as unpatentable over Gwyn (US 4,397,422, issued Aug. 9, 1983), Holt (US 5,501,397, issued Mar. 26, 1996) and Farnan (US 5,456,023, issued Oct. 10, 1995).^{2,3} Claims 6, 11, 18 and 22-25 have been canceled. We have jurisdiction over this appeal under 35 U.S.C. § 6.

THE INVENTION

Appellants' claimed subject matter relates to a device for liquid injection and vaporization within a chemical vapor deposition process, including the combination of a chemical vapor deposition chamber and an

¹ This is Appellants' second appeal before the Board of Patent Appeals and Interferences in the instant application. In the first appeal (Appeal No. 2005-2075, Decision mailed Nov. 18, 2005), the 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a) rejections of claims 1-5, 7-10, 12-17, 19-21 and 26-30 were procedurally reversed and a new ground of rejection under 35 U.S.C. § 112, second paragraph, for indefiniteness was entered for claims 1-5, 7-10, 12-17, 19-21 and 26-30.

² The rejection of claim 31 under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement has been withdrawn by the Examiner. Ans. 2-3.

³ The Examiner points to column 3, lines 25-35 of Farnan as merely support for concluding that, "[i]t would have been obvious to a person having ordinary skill in the art at the time of the invention to have provided a chamber to the device of Gwyn as taught by Holt to reduce dust contamination." Ans. 5.

apparatus having an inlet nozzle 50, a throat region 44 and an exit nozzle 42.

Spec. 1, ll. 6-7; 8, ll. 13-21 and 9, ll. 13-14 and figs. 1 and 2.

Claim 1 is illustrative of the claimed invention and reads as follows:

1. The combination of a chemical vapor deposition chamber and an apparatus for delivering a plurality of chemical vapor deposition fluids to said chamber, comprising:

said chemical vapor deposition chamber for processing a semiconductor substrate;

said apparatus for delivering said plurality of chemical vapor deposition fluids to said substrate, said apparatus attached to, and in fluid communication with, said chamber, and having a cavity comprising an inlet nozzle, a throat region and an exit nozzle,

said inlet nozzle having a first diameter adapted to receive a carrier fluid, and having a first pressure and a first temperature;

said throat region, having a first and second end, connected to said inlet nozzle at said first end, said throat region having a second diameter less than said first diameter and adapted to receive said carrier fluid from said inlet nozzle, said throat region having a second pressure lower than said first pressure and a second temperature, and having a first and a second aperture adjacent to said first and second ends for injecting, respectively, a first and a second chemical vapor deposition dopant into said throat region to allow for atomization of said first and second chemical vapor deposition dopants by said carrier fluid and mixing of said atomized first and second chemical vapor deposition dopants with said carrier fluid; and

said exit nozzle, connected to said throat region at said second end, having an exit pressure lower than said second pressure and a third temperature, said exit nozzle having a third diameter greater than said second diameter to allow for a substantial decrease in pressure from said first pressure to said exit pressure, and configured to introduce said mixed atomized first

and second chemical vapor deposition dopants and said carrier fluid in the chemical vapor deposition chamber.

SUMMARY OF DECISION

We REVERSE.

OPINION

The § 112, second paragraph, rejection

Independent claim 31 requires an “apparatus for introducing TEOS and other dopant fluids at a high pressure, while not requiring the use of capillary tubes to create a pressure differential.” App. Br., Claims Appendix.⁴ The Examiner takes the position that (1) “[t]he claim requires the apparatus itself to create a pressure differential but cannot have any capillary tube;” (2) “[i]f the apparatus is required to create a pressure differential, the metes and bounds of the negative limitation cannot be determined;” and (3) “it is uncertain what physical elements are being claimed to create the pressure differential.” Ans. 3-4.

It is well established that the test for definiteness under 35 U.S.C. § 112, second paragraph, is whether “those skilled in the art would understand what is claimed when the claim is read in light of the specification.” *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986) (citations omitted). In this case, Appellants’ Specification specifically discloses that, “[t]he cross-flow injector

⁴ Throughout this Opinion we shall refer to Appellants’ Appeal Brief, filed August 6, 2007, as “App. Br.”; Appellants’ Supplemental Appeal Brief, filed Dec. 24, 2008, as “Supp. App. Br.”; and Appellants’ Reply Brief, filed February 26, 2008, as “Reply Br.”

[apparatus] . . . would allow the introduction of TEOS and other dopant fluids at a relatively high pressure . . . , and would not require the use of capillary tubes to create a pressure differential. The choked, narrowed throat provides this needed pressure differential.” Spec. 13, l. 16 through 14, l. 2. *See also*, Supp. App. Br. 23 and Reply Br. 3. Furthermore, Appellants specifically note:

The capillary tubes simply introduce the dopants, and specifically the TEOS to the chamber. ‘Importantly, in the present invention the capillary tubing is used *only* to supply liquids for the instant invention.’ (Specification, p.12, ll.22-23.) As cited above, the capillary tubes do not provide for a pressure differential as is normally expected of such tubes in the prior art.

Supp. App. Br. 24 (emphasis added). *See also*, Reply Br. 4.

As such, because the Specification discloses that (1) TEOS and other dopant fluids can be introduced at a relatively high pressure via the apparatus without the use of capillary tubes to create a pressure differential; (2) the choked, narrowed throat of the apparatus provides the needed pressure differential; and (3) the capillary tubing is used only to supply liquids for the instant invention , we conclude that the claim language, when read in light of the Specification, is understandable to those skilled in the art.

Accordingly, for the foregoing reasons, the rejection of claim 31 under 35 U.S.C. § 112, second paragraph, as being indefinite cannot be sustained.

The obviousness rejection over Gwyn and Holt

Each of independent claims 1, 13, 28 and 31 recites “[t]he combination of a chemical vapor deposition chamber and an apparatus for

delivering a plurality of chemical vapor deposition fluids to said chamber” including “said chemical vapor deposition chamber *for processing a semiconductor substrate.*” Emphasis added. App. Br., Claims Appendix.

The Examiner takes the position that (1) “[t]he specification fails to specifically indicate that the term ‘chemical vapor deposition chamber’ should be interpreted in a specific manner when used in the claims;” and (2) “[c]laims 1, 13, 28 and 31 merely recite the *intended use* of the chemical vapor deposition chamber ‘*for processing a semiconductor substrate.*’” Ans. 7. Emphasis added.

We do not agree with the Examiner’s position, because the Examiner has incorrectly construed the emphasized recitation of “for processing a semiconductor substrate” to be an intended use of the chemical vapor deposition chamber. The correct construction of the “for processing a semiconductor substrate” is as a function of the chemical vapor deposition chamber. In other words, the capacity to process a semiconductor substrate must be an inherent characteristic of the chemical vapor deposition chamber. *See In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971).

Additionally, the Examiner finds that Gwyn lacks, but that Holt discloses a chamber (i.e., spray booth No.1, No.2 and No.3) “having a spray gun 88 attached to the spray booth at ceiling 94 and in communication with the chamber.” Ans. 5. *See also*, Holt figs. 1 and 5. The Examiner then concludes that “[i]t would have been obvious to a person having ordinary skill in the art at the time of the invention to have provided a chamber to the device of Gwyn as taught by Holt to reduce dust contamination (as evidenced by Farnan).” *Id.* *See also*, Farnan, col. 3, ll. 25-35. As such, the Examiner’s reasoning requires that Holt provides sufficient evidence or scientific reasoning to establish the reasonableness of the Examiner’s belief

that the functional limitation (i.e., for processing a semiconductor substrate) is an inherent characteristic of Holt, so as to shift the burden to Appellants “. . . to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.” *Swinehart*, 439 F.2d at 213.

We do not agree with the Examiner’s position, because the Examiner has failed to make any findings on the record or offered any technical reasoning explaining how Holt’s paint spray booth (i.e., chamber) necessarily possesses the capability to process a semiconductor substrate, nor has the Examiner explained how any of the proposed modifications of Gwyn in view of Holt would necessarily afford Gwyn’s paint spraying device with such capability. *See, e.g.*, App. Br. 14.

As such, the Examiner has not provided any evidence or technical reasoning to establish a prima facie case that the paint spraying device of Gwyn as modified by Holt is reasonably capable of functioning to process a semiconductor substrate, so as to shift the burden to Appellants to show that this is not the case. Consequently, we find the Examiner has not discharged the initial burden of establishing a prima facie case of obviousness of the subject matter of independent claims 1, 13, 28 and 31.

Accordingly, for the foregoing reasons, the rejection of claims 1-5, 7-10, 12-17, 19-21 and 26-31 as unpatentable over Gwyn, Holt and Farnan cannot be sustained.

DECISION

The decision of the Examiner is reversed as to claim 1-5, 7-10, 12-17, 19-21 and 26-31.

REVERSED

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